UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,139	02/06/2006	Jean Michel Martin	023971-0642	8913

22428 7590 05/03/2011
FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

EXAMINER	
PILKINGTON, JAMES	

ART UNIT	PAPER NUMBER
3656	

MAIL DATE	DELIVERY MODE
05/03/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/567,139	MARTIN ET AL.	
	Examiner	Art Unit	
	JAMES PILKINGTON	3656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 April 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,10,12-18 and 24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,10,12-18 and 24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 February 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 24 is objected to because of the following informalities: line 3, "eliding" should be - -sliding- -. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 16, 17, 18 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 16 line 5 recites a hydrogen content of "20 atomic percent or less" and later in line 14 recites "10 atomic percent or less". It is not clear if the claim is limited to 20 atomic percent or 10 atomic percent. It is suggested that the claim be amended to remove 20 atomic percent.

Claim 17 line 5 recites a hydrogen content of "20 atomic percent or less" and later in line 14 recites "0.5 atomic percent or less". It is not clear if the claim is limited to 20 atomic percent or 0.5 atomic percent. It is suggested that the claim be amended to remove 20 atomic percent.

Claim 18 line 5 recites a hydrogen content of "20 atomic percent or less" and later in lines 14-15 recites that the coating "does not contain hydrogen". It is not clear if the claim is limited to 20 atomic percent or no hydrogen. It is suggested that the claim be amended to remove 20 atomic percent.

Claim 24, as amended now recites that the low-friction agent composition comprises an ester and an oxygen-containing organic compound also contained in the low-friction agent. The specification establishes that an oxygen-containing organic compound includes an ester. It is not clear if the claim is now reciting a low-friction agent that has an ester and an additional oxygen-containing organic compound or if "an oxygen-containing organic compound" is referencing the ester. Based on the specification stating that the ester is an option for the oxygen-containing organic compound and the specification not stating that multiple compounds can be used it is being assumed that "an oxygen-containing organic compound" should be - - the ester- -.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 10 and 12-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pope, USP 6,655,845 in view of Rubin, USP 5,064,547, and further in view of Veerasamy, USP 7,067,175..

Regarding claims 1, 2, 12-14, 16-18, Pope discloses a low-friction sliding mechanism wherein:

- the DLC coated sliding member (races in Figures 2H-1, 2H-2 and 2K-1) is formed by coating diamond-like carbon on a base material (polycrystalline diamond, PDC);

- the sliding member (roller in Figure 2K-1) is formed with at least one kind of material selected from a group consisting of a metal material (at least manganese alloy disclosed, see Table 2), a non-metal material and a coated material obtained by coating a thin film on a surface of the metal material or the non-metal material (roller is coated with PDC, clm 2)

Pope does not disclose the use of a low-friction agent composition that contains at least one kind selected from a group consisting of an oxygen-containing organic compound (C) between the two sliding members, wherein the oxygen-containing organic compound is at least one kind selected from a group consisting of alcohols, esters, ethers, ketones, aldehydes, carbonates and derivatives thereof and is contained in the range of 0.05 to 3.0% relative to the total mass amount of low-friction agent composition.

Rubin teaches a low-friction agent composition (lubricant) that contains an oxygen-containing organic compound which is a ester or alcohol (Rubin discloses in column 7, lines 13-26 that esters and alcohols can be used in addition to carboxylic acid) and is contained in a range of 0.05 to 3.0% by mass (weight, column 4 lines 50-59) for the purpose of providing a lubricant with corrosion inhibiting properties (column 5 lines 66-68).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Pope and provide a low-friction agent composition that contains an oxygen-containing organic compound of carboxylic acid in a range of 0.05-

3% of the total mass amount of low-friction agent composition, as taught by Rubin, for the purpose of providing a lubricant with corrosion inhibiting properties.

Pope also does not disclose that the DLC has a hydrogen content of 20 percent or less, in particular an a-C diamond like carbon with no hydrogen.

Veerasamy teaches a DLC which is an a-C diamond like carbon (ta-C) which does not contain hydrogen (column 8 lines 35-36, no hydrogen satisfies the limitations 20% or less, 10% or less, 0.5 % or less and no hydrogen) for the purpose of repelling water and reducing corrosion (column 1 lines 15-21).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Pope and provide for the DLC to have a hydrogen content of 20 percent or less, in particular an a-C diamond like carbon with no hydrogen, as taught by Veerasamy, for the purpose of repelling water and reducing corrosion.

Regarding claims 10 and 15, Pope in view of Rubin discloses all of the structural components as recited above, therefore the structure has been supplied and formed. Claims 10 and 15 do not provided any particular method steps that would differentiate over the prior art.

Claims 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pope, USP 6,655,845 in view of Morway, USP 3,196,109.

Pope discloses a low-friction sliding mechanism wherein:

- the DLC coated sliding member (races in Figures 2H-1, 2H-2 and 2K-1) is formed by coating diamond-like carbon on a base material (polycrystalline diamond, PDC);
- the sliding member (roller in Figure 2K-1) is formed with at least one kind of material selected from a group consisting of a metal material, a non-metal material and a coated material obtained by coating a thin film on a surface of the metal material or the non-metal material (roller is coated with PDC, clm 2)

Pope does not disclose the use of a low-friction agent composition that comprises an ester/oxygen-containing organic compound, the ester comprising at least one kind selected from the group consisting of glycerin monooleate, glycerin dioleate, sorbitan monooleate and sorbitan dioleate, the ester being contained in the range of 0.05 to 3.0% relative to the total mass amount of low-friction agent composition.

Morway teaches a low-friction agent composition (lubricant) that that comprises an ester, the ester being sorbitan monooleate (see column 3 lines 17-24) and the ester contained in the range of 0.05 to 3.0% relative to the total mass amount of low-friction agent composition (see column 3 lines 17-24, additives are contained in a 0.1-10% range) for the purpose of inhibiting corrosion (sorbitan monooleate is a known corrosion inhibitor (see column 3 lines 17-24).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Pope and provide a low-friction agent composition that

comprises an ester, the ester comprising at least one kind selected from the group consisting of glycerin monooleate, glycerin dioleate, sorbitan monooleate and sorbitan dioleate, the ester being contained in the range of 0.05 to 3.0% relative to the total mass amount of low-friction agent composition, as taught by Morway, for the purpose of providing a lubricant with corrosion inhibiting properties.

Response to Arguments

Applicant's arguments filed April 12, 2011 with respect to Pope in view of Rubin/Veerasamy have been fully considered but they are not persuasive.

Applicant first states (see points 1 and 2) that the amendment to the independent claims is incorporating the limitations of old claim 3 but does not argue why the prior teaching of claim 3 using Veerasamy is not a proper teaching for the hydrogen content outside of Veerasamy not having a lubricant.

The teaching of Veerasamy discloses a DLC coating that has no hydrogen. The presence of no hydrogen meets the claim limitation which states "20 atomic percent or less" and when combined with Pope and Rubin results in a bearing assembly having a lubricant.

Applicant also states (see point 3) that Pope discloses a rolling bearing having a roller and a race which is a different technical field from the present invention.

In response to applicant's arguments, the recitation of transmission and gear unit (claims 12 and 13) are recitations that occur in the preamble. A preamble is generally

not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). In this case no structure of the transmission or gear unit is stated in the claims which make these recitations intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In this case the low friction composition of the combination of Pope, Rubin and Veerasamy can indeed be used in a transmission and gear unit. In addition, Rubin discloses that the lubricant is for automobile components.

Applicant argues that Rubin's only purpose is for inhibiting corrosion and not reducing friction which results in no motivation to combined Rubin with Pope (see point 4).

The examiner recognizes that obviousness may be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), *In re Jones*, 958 F.2d

347, 21 USPQ2d 1941 (Fed. Cir. 1992), and *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007). In this case, although the motivation is different, Rubin teaches the use of a lubricant that meets the claim limitations and is used in a bearing, for the purpose of inhibiting corrosion, although this is not the same motivation as in the instant application it does not discredit Rubin as a valid teaching.

Applicant restates the prior argument (see point 5) that Pope and Rubin/Veerasamy teach separately using a DLC coating and an oxygen-containing organic compound contained in lubricating oil and do not teach using the lubricant in combination with a DLC coating and a skilled artisan would require the knowledge of the mechanism that allows a low-friction agent with the organic compound to interact with the DLC coating, and this knowledge was not available to the skilled artisan until it was discovered by the Applicant.

Pope discloses that bearing elements can be provided with a DLC coating and Rubin discloses a lubricant having an organic compound which is used on sliding surfaces. Applicant has not developed the DLC coating or the lubricant, both of these features where known at the time of filing by Applicant. Since both components were known at the time of filing the question is not if a skilled artisan processed the knowledge of the result of combining the two but whether or not a skilled artisan processes the ability to combine the two. Using lubricant in bearings was also known at the time of filing and one of ordinary skill processes the ability of combining the bearing of Pope with any known stock lubricant, the resulting property of the bearing with any

lubricant would be a modification to the friction between the members. One of ordinary skill in the art does indeed process the ability and knowledge to select any lubricant for a bearing based on friction reduction, corrosion resistance or thermal properties of the environment of use for the bearing. The degree of friction modification which Applicant has measured in the combination of a DLC coating with an oxygen containing element is not in itself an invention.

With regards to the rejection of claim 24, Pope in view of Morway, Applicant restates the arguments that Morway is related only to a lubricant that inhibits corriosion and not reducing friction and therefore there is no motivation to combine, And that neither Pope nor Morway disclose a DLC coating in combination with a lubricant.

The examiner recognizes that obviousness may be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992), and *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007). In this case, although the motivation is different, Morway teaches the use of a lubricant that meets the claim limitations and is used in a bearing, for the purpose of inhibiting corrosion, although this is not the same motivation as in the instant application it does not discredit Morway as a valid teaching.

Also, Pope discloses that bearing elements can be provided with a DLC coating and Morway discloses a lubricant having an organic compound which is used on sliding surfaces. Applicant has not developed the DLC coating or the lubricant, both of these features where known at the time of filing by Applicant. Since both components were known at the time of filing the question is not if a skilled artisan processed the knowledge of the result of combining the two but whether or not a skilled artisan processes the ability to combine the two. Using lubricant in bearings was also known at the time of filing and one of ordinary skill processes the ability of combining the bearing of Pope with any known stock lubricant, the resulting property of the bearing with any lubricant would be a modification to the friction between the members. One of ordinary skill in the art does indeed process the ability and knowledge to select any lubricant for a bearing based on friction reduction, corrosion resistance or thermal properties of the environment of use for the bearing. The degree of friction modification which Applicant has measured in the combination of a DLC coating with an oxygen containing element is not in itself an invention.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES PILKINGTON whose telephone number is (571)272-5052. The examiner can normally be reached on Monday - Friday 7-3.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571)272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JAMES PILKINGTON/
Examiner, Art Unit 3656
4/25/11